

# A participatory approach to conservation in the Calakmul Biosphere Reserve, Campeche, Mexico

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## Abstract

Since the advent of integrated conservation and development programs, participatory approaches have been used to engage local people in protected area management and conservation action. While participatory approaches provide local people a role in telling their own story and enable them to contribute to conservation and development processes, **it is unclear how much consideration local people's opinions receive within the framework of a participatory process that exists to meet the specific goals and objectives of conservation programs.** This paper evaluates the strengths and weaknesses of the participatory approach used in an applied research program conducted in three *ejido* communities in the Calakmul Biosphere Reserve on the Yucatan Peninsula of Mexico. The research program used community mapping, historical matrices, institutional diagramming, seasonal calendars, semi-structured interviewing and other community-level reflection techniques to assess the complex interrelationships among population growth, migration, tenure regimes, and land-use practices in rural communities bordering the reserve. The program also sought to build local capacity and support for land-use planning and conservation programs. While the paper acknowledges the critical benefits of local participation it also **questions the compatibility of this approach with conservation programs administered by conservation organizations as they are currently structured.**

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**Keywords:** Integrated conservation and development programs; Calakmul Biosphere Reserve; Community-level reflection; Participatory methods

## Resumen

El enfoque de investigación participativa ha sido usado para involucrar a la gente local en el manejo de áreas protegidas y las actividades de conservación biológica desde los inicios de los programas integrados de conservación y desarrollo rural. Tal enfoque da a la gente local un rol en la comunicación de su propia historia y hace posible su contribución a dichos procesos de conservación y desarrollo; sin embargo, no hay claridad sobre cuánta consideración hay que dar a aquellas aportaciones locales con relación a las metas y objetivos de los programas de conservación. Este artículo evalúa las fortalezas y debilidades del enfoque participativo empleado en un proyecto aplicado en tres comunidades ejidales aledañas a la Reserva de la Biósfera Calakmul en la Península de Yucatán, México. Este proyecto incorporó el uso de mapas de la comunidad, matrices de historia, diagramas institucionales,


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calendarios, encuestas semi-estructuradas y otras técnicas de reflexión al nivel comunitario para evaluar las relaciones complejas entre el crecimiento población, la migración, la tenencia de la tierra y las prácticas del uso del suelo. Además, el proyecto intentó fortalecer la capacidad local en la toma de decisiones y apoyar la planeación del uso del suelo y actividades de conservación. Mientras que este artículo reconoce los beneficios críticos de la participación local, también cuestiona la compatibilidad de este enfoque con los proyectos de conservación administrados por las organizaciones conservacionistas como están estructurados hoy en día.


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**Palabras clave:** Investigación participativa; Programas integrados de conservación y desarrollo (PICD); Reserva de la Biósfera Calakmul; Conservación de la biodiversidad y planeación del uso del suelo

## 1. Introduction




During the last three decades the practice of biodiversity conservation, particularly in the tropical regions of the world, has focused on linking the goals of conservation with the goals of development through sustainable use of natural resources. While this linkage has inspired heated debate within the conservation community in recent years (Terborgh, 1999; Oats, 1999; Wilshusen et al., 2002; Brechin et al., 2002) it has reshaped the way conservation practitioners interact with the people living around protected areas. Interaction today is more collaborative in nature than it was when some of the world's first protected areas were established in the mid-19th and early 20th centuries. Rather than excluding and relocating local people to create parks, the current strategy supports engaging local populations in protected area management based on the theory that long-term conservation efforts have a greater chance of success if conservation activities involve local people and provide opportunities for improvement of their economic well being (Pimbert and Pretty, 1995).



With the process of linking conservation and development programs and the rise of community-based conservation came the introduction of planning methods and techniques originally designed and tested by development professionals within a development context. In particular, methods that facilitate stakeholder involvement and include the voice of local people in programmatic processes have been embraced for use in integrated conservation and development programs. In fact the donors who fund these processes often require a community-based conservation component that ensures the participation of local people. Consequently many conservation practitioners employ participatory methods to engage local communities in the conserva-

tion process and increase local ownership of conservation programs.

When employed as a research method the participatory approach is perhaps more powerful than other methods of social science research because it gives local people a role in telling their own story. In the Calakmul Biosphere Reserve on the Yucatan Peninsula of Mexico we utilized this approach in an applied research program, which enabled us to significantly deepen our understanding of the issues surrounding land-use and population expansion as related to biodiversity conservation in that region. However, the participatory approach is meant to go beyond being a means to facilitate the collection of data or the achievement of specific objectives. In its broadest form the participatory approach is participatory development. It is an end in itself, meant "to increase the involvement of socially and economically marginalized people in decision-making over their own lives" (Guijt and Braden, 1999, p. 1). Since my experience in Calakmul in the mid-1990s I have been exposed to a wide range of participatory approaches and interpretations of the meaning of local participation as used in community-based conservation programs associated with protected areas across Latin America and Asia. This exposure has raised some important questions and provides an opportunity for reflection about the implications that participatory approaches have for biodiversity conservation.



In this paper, I share my experiences in the Calakmul Biosphere Reserve as coordinator of an applied research program with a capacity building component designed to increase the interest of local people in conservation and population issues and increase their capability to defend their lands and forests in the face of a rapidly expanding population. The applied research program employed a participatory approach and in-

cluded the use of participatory rural appraisal techniques in a series of case studies. Based on this experience I will present some of what I perceive to be the strengths and weaknesses of the approach when used in association with a conservation program. Lastly I will also discuss how participation relates to the larger debate of integrated conservation and development programs, and close with some suggestions for conservation practitioners employing a participatory approach.

## 2. The theory of participation

Participatory methods and techniques took root in the late 1970s and early 1980s in response to highly centralized, top-down approaches to research and planning. They offered an alternative to formal research techniques such as questionnaires and surveys, as well as conventional development intervention models and technologies, such as the green revolution, which was based on research conducted in industrialized countries and adapted for use in the non-industrialized world. Questions later arose about the appropriateness of first world solutions for the social and economic contexts of the third world especially when imposed by government or international aid organizations because the results were often short-lived (Pimbert and Pretty, 1995). In contrast, participatory methods were designed to incorporate local knowledge and perspectives, priorities and skills in the development process while facilitating the empowerment of local people (Guijt and Shah, 1999). Essentially participatory methods offer local people a role in research and planning that can result in solutions, which are more appropriate for the local context and longer lasting.

By the early 1990s a global level of interest in stimulating local participation had developed among NGO's, government ministries, and academic institutions. Today this approach, originally designed to avoid the limitations of top-down, blueprint-style planning and large-scale research techniques has become standard practice in many fields including biodiversity conservation. Donor organizations such as the World Bank and the Global Environment Facility<sup>1</sup> that provide bil-

ions of dollars to both biodiversity conservation, rural and urban development programs in some of the world's poorest areas have revised their strategies to recommend public participation and consultation with affected populations in project assessment and implementation (Rosenberg and Korsmo, 2001). However, in many cases the concept of participation is only vaguely defined and applied without rigor (Little, 1994). It is often utilized in such a way as to ensure a desired outcome that will suit the strategic objectives of the funder. Prior to entering a given region a donor organization may have already decided what needs to be done and goes in search of support from local communities under the rubric of participatory programming, even providing incentives in some cases to motivate local involvement, sometimes in project planning but most often in project implementation.

Given that local participation has been heralded as a critical component in determining the success of development projects in Africa, Asia and Latin America it is important to clarify the meaning of participation and identify the numerous forms it can take. Clearly it can mean different things in different contexts for different people. Individuals or groups can participate willingly or can be coerced into participating. Participation can be active or passive in nature, and the very fact that members of a particular group participated in a given process in an undefined manner can be used to justify opinions and ideas expressed in their presence, but not necessarily embraced by them. The original version of the participation typology identifies seven ways in which the term participation can be used and interpreted (Pretty et al., 1995). Fig. 1 shows a slightly more condensed version adapted for use in Latin America (Ulfelder et al., 1998). These typologies range from passive participation in which local people are silent partners or donors of information, and control over content is maintained by outsiders; to consultation-based participation in which local people do not share in decision-making but their opinions influence the problems and solutions defined by outsiders; to interactive and self-motivated participation in which local people take active and inde-

<sup>1</sup> The Global Environment Facility (GEF) is an independent financial organization that helps developing countries fund projects and

programs that protect the global environment. Primarily the United Nations Environment Programme, the United Nations Development Programme, and the World Bank manage GEF projects, with assistance from other international organizations.

pendent roles in identifying problems and solutions, and in making decisions. If the goal is to fully engage local people in conservation programs the most desirable forms of participation would be the highly active, perhaps even self-motivated, forms, and the least desirable would be the contractual and passive forms. Although a few years ago most cases represented the passive and consultative forms of participation in the management and formation of protected areas (Pimbert and Pretty, 1995), more cases are appearing that illustrate collaborative forms of participation where local people are taking active roles, as in the formation of both the Campesino Ecological Reserve Project in the Chimalapas region of Oaxaca, Mexico (Caballero, 2000) and El Consorcio Carchi in the El Angel River watershed in northern Ecuador (Poats, 2001).

## 2.1. Participatory rural appraisal

**Participatory rural appraisal (PRA)** is a practical set of techniques that enable local people to express and share their experience and knowledge of life and its conditions with others for purposes of planning, action, monitoring, and evaluation (Chambers, 1997). It derives from a predominately extractive data collection method known as rapid rural appraisal (RRA) and is one among many such frameworks used to conduct participatory research and analysis. It utilizes a wide variety of tools such as **participatory mapping and modeling, seasonal calendars, transect diagrams, ranking matrices, timelines, and institutional diagramming** to construct visible images on a canvas of earth using local materials, or on sheets of paper using available writing instruments, that reflect the story an informant is

Types	Components of each type
Passive participation	The community or group of persons receives information about something that will occur or has already occurred. The idea or need for community participation comes from outside the community, normally from agents who promote conservation. The “participatory interaction” occurs in only one direction – from those who have made certain decisions toward those who must listen. The community’s answers are not taken into consideration and “owners” of the information are the professionals or other persons from outside the community. Sometimes, the apparently passive participation is really coercive, due to the fact that regulations or policies that require participation are already in place. An example of coercion can be the fines charged to persons who do not attend or who do not send a representative in their place to a meeting.
Contractual participation	The community’s participation in certain activities is requested or invited through a formal arrangement. For example, an arrangement is made whereby the project provides the materials and technical assistance and the community participates providing the labor. Sometimes a “price” is established on the basis of the value of the labor. In this case, the community is said to be participating in the activity by providing the labor. However, in this type of participation, the idea of participation comes from outside, the manner and level of participation is determined by those outside, and a limited flow of information or opinion by the community exists toward those leading the project.
Consultative participation	The initiative to participate comes from outside but is based on the desires, opinions, and needs of the people or the community. Agents from outside define the problems and solutions, but may modify them in light of information obtained in their consultations with the community. Information about the community is normally obtained by “extractive researchers,” analyzed by experts outside of the community, and a solution is proposed to the community. In these situations, the relationship between the community and the outside agents is similar to the “doctor-patient” relationship.
Collaborative participation	The idea of promoting the community’s participation comes from the outside, but in this case both parties participate in the same manner in

Fig. 1. Typology of local participation in conservation.



	diagnosing the problem, analyzing the data, designing the solution, implementing, monitoring, and evaluating the initiative. For this type of participation to really work, long-term relationships and commitments are required between both parties: the community and outside agents. Continuous interactions are also required: this is not a fast process and establishing this type of participation is difficult when large distances exist between those involved. Although the goal is to establish a more equal and fair relationship, certain hierarchies of roles among those from outside and those from inside the community are always maintained, at least in the beginning.
Participation “among colleagues”	While promotion of conservation activities may be important, the fundamental objective is to actively strengthen local capabilities so that the community and/or local groups can themselves carry out their development and conservation projects. The initiative for this type of participation comes from the outside, but emphasis is placed on activities that can increase the ability of informal and local systems to be self-mobilizing. In a manner of speaking, the outside agents who stimulate this type of participation want to “level the playing field” for conservation and development, and want their colleagues from the community to acquire power and promote the development of their abilities to negotiate with outside agencies and organizations.
Community self-mobilization	All the participation types described above involve two parties: the local people or the community and the outside agents. This last category involves only one party: the community. In these cases, the community self-mobilizes in the identification of a problem and its solution, without the existence of an outside initiative. The local group or the community seeks its own resources and means to resolve its problem or implement its conservation activity. Help may be sought from outside technicians or specialists, but the community controls the process. When outside help is sought, it tends to be on the basis of participation “among colleagues.” This type of community participation in the conservation of natural resources tends to be classified as “ideal;” however, it is important to recognize that these types of activities may or may not question or address inequities existing in the community. Conservation activities favoring the local authorities and hurting socially disadvantaged groups, such as the poorest, the young, women, or local minority groups may be generated.

Source: Ulfelder 1998, (modified for presentation in table format).

Fig. 1. (Continued).

telling. In contrast to rapid rural appraisal, the **participatory version strives to generate local ownership of information as part of a larger process of empowerment**<sup>2</sup> (Chambers, 1994; Schoonmaker Freudenberger, 1994).

One of the cornerstone principles underlying participatory rural appraisal is the concept of “handing over the stick”, which refers to creating an opportunity for local people to tell their own story without interruption. In theory, handing over the stick, chalk, or pen is a simple way of encouraging community members to de-

scribe their own situation and diagnose their own problems by giving them the means and the space to communicate their needs and objectives with others outside of the community. However, encouraging people to tell their own story through use of participatory methods does not necessarily extend to, or guarantee, the kind of empowerment that will also enable them to participate in setting broader agendas beyond the reaches of their community (Guijt and Cornwall, 1995). This type of empowerment depends more on the **larger process** and on facilitation style than on the simple act of telling a story or the methods used to tell it. In practice, **the process of building leadership and cultivating local capacity for communication, negotiation and action can be a long, tiring and hard exercise for all involved.** It requires a significant commitment of time, patience and

<sup>2</sup> Empowerment refers to the process by which individuals or groups shape their lives and the society in which they live based on their ability to influence change through access to knowledge, political process and financial, social and natural resources (Slocum and Thomas-Slayer, 1995).



funding on the part of those facilitating the process, and a sustained measure of interest and stamina on the part of community members.

Another important principle of participatory rural appraisal, which is shared with other forms of rural appraisal, is triangulation. In field research it is preferable to avoid favoring one perspective, or one situation, over others and thus creating a distortion of reality. For example, a study that only considers the problems of households located along a river may be spatially biased because it fails to include those located at a distance from the river where other types of problems might occur. Triangulation is used to minimize the bias of favoring one view of reality over others, and to ensure presentation of key situations and community dynamics from a wide range of angles (Chambers, 1994; Schoonmaker Freudenberger, 1994; Anderson and Rietbergen-McCracken, 1995). Triangulating means looking at a problem from as many perspectives as possible, and is achieved by comparing results generated by a variety of tools, informants and facilitating team members representing a diversity of ages, ethnicities, genders, and professional disciplines.

### 3. Applying a participatory approach in Calakmul

The Calakmul Biosphere Reserve was established by presidential decree in 1989 and accepted into the United Nations network of biosphere reserves in 1993. Located in the State of Campeche on the Yucatan Peninsula, its 723,185 ha represent the largest tract of protected tropical forest in Mexico. It is an important site for biodiversity conservation and a key element in a larger system of protected areas that provides protection to more than 25,000 km<sup>2</sup> of tropical forest in Mexico, Guatemala, and Belize (Primack et al., 1998).

Calakmul is a biosphere reserve, which means its basic design is based on zoned and managed core and buffer areas. The core area is meant to be left alone and should not contain settlements or support any type of activity. The buffer zone surrounding the core area performs a transition-like function to the outside wherein settlements are allowed but productive activities must be ecologically sound. An important contribution of the biosphere reserve concept to the topic of protected areas is the component of linking biodiversity conservation

with human activities and rural development (Batisse, 1984).

According to archeologist William Folan (pers. commun.) the idea of forming a nature park around the Calakmul archeological site was developed in the early 1980s at the Historical and Social Research Center of the Autonomous University of Campeche. Unfortunately the idea did not engender widespread support at that time and it was not until years later when Mexico was in the process of re-negotiating its foreign debt and experiencing international pressure to create forest reserves that the idea came to fruition. Due to the hurried creation of the reserve, the boundaries of the core and buffer zones are neither socially nor biologically appropriate. The local population was not consulted during the design process and the process itself did not take into account the presence of occupied lands within the supposedly pristine core area (Acopa and Boege, 1998), which later resulted in the relocation of some communities. At the time the reserve was established there was insufficient biological information available to guide the design and early management process (Galindo-Leal, 1999; Galindo-Leal et al., 2000). Since that time various proposals have been generated by the administration of the reserve and by conservation groups<sup>3</sup> to correct design errors and redraw the borders, but thus far none have been implemented.

I visited the reserve for the first time in 1993 with members of the Pilot Forestry program (*Plan Piloto Forestal*) from the neighboring state of Quintana Roo. Later, I returned at the invitation of then reserve director, Deocundo Acopa, to study the dynamics of the integrated conservation and development approach being applied at that time. Deocundo was one of the primary architects of the Pilot Forestry program, which to this day continues to serve as a model for small-scale forestry programs in many parts of Central and South America. Deocundo was a dynamic leader who had a talent for bringing people together and encour-

<sup>3</sup> In 1999 the Center for Conservation Biology at Stanford University combined forces with El Colegio de la Frontera Sur (ECOSUR) and the World Wildlife Fund-Mexico to bring together a group of experts in Campeche to develop guidelines for decision-makers to aid planning and development for both the reserve and the municipality. The group synthesized current research data within a large landscape scale perspective and came up with a design proposal that corrects many of the errors characteristic of the current configuration (see Galindo-Leal et al., 2000).

aging the local population, including women, to participate in conservation and development activities. He understood the agendas of national and international conservation and aid organizations.

In the mid-1990s Deocundo and the reserve administration began to focus attention on the growing number of colonists settling in the *ejido*<sup>4</sup> communities located on its borders. There was significant concern about the probable impact of migrant populations settling in what was quickly becoming a frontier agricultural zone, and there was a growing need to formulate appropriate policy responses. **Increasing levels of immigration posed a threat to the long-term economic, social, and ecological viability of the reserve.** According to national statistics the number of inhabitants in the region now known as the municipality of Calakmul increased from 6000 to 25,000 between 1980 and 1995 (Ericson, 2001). This sharp population increase was alarming in light of the reserve's mission to preserve the remaining forests.

To increase understanding and generate dialogue among key stakeholders (e.g. community members, regional authorities, and national and international governmental and non-governmental institutions) about the impact of population growth and distribution on biodiversity conservation in and around the reserve Deocundo invited conservation organizations already at work in the region to develop an applied research program focusing on issues of population and the environment.<sup>5</sup> In addition to furthering our understanding of the situation and generating dialogue, the objectives of the resulting Population–Environment Program (P–E Program) included initiating a participatory land-use planning process that took account of the complex local and regional human population dynamics.

<sup>4</sup> An *ejido* is a uniquely Mexican form of land grant administered by a group of individuals called *ejidatarios* who hold usufruct rights accorded to them by the federal government. In 1991 this system was revised to allow for the privatization of *ejido* lands. Due to the extensive amount of standing forest in the Calakmul *ejidos* land titles in this region were made available for urban plots only.

<sup>5</sup> The Population–Environment Program (P–E Program) was a collaborative effort between the Mexican non-governmental conservation organization, Pronatura Península de Yucatán, A.C. (PPY) and the international conservation organization, World Wildlife Fund (WWF). A US-based university program funded by the US Agency for International Development (USAID), the University of Michigan Population–Environment Fellows Program, provided support by assigning a Fellow, myself, to coordinate the program.

Another objective was to develop an effective, low-cost population monitoring system that would be sensitive to changes taking place at the local scale, changes which might not be easily detected in the nation-wide census delivered at 5-year intervals by the National Institute of Statistics, Geography, and Information (INEGI).

The effort to generate dialogue focused on a number of political and social levels to engender support for the formulation of appropriate policy responses to migration and to explore options for designing a culturally and politically acceptable land-use planning process. The basis for dialogue was to come from the presentation of demographic and land-use data and be driven by increased interest and capacity for involvement in land-use planning and conservation action at the grassroots level. Data collection took place on national and regional levels using primary and secondary sources to assess the forces that affect population growth while identifying the critical areas around the reserve where population increases appeared to be putting pressure on the reserve. The results were presented to Campeche State government officials and members of the academic and conservation communities. Data collection also took place at the grassroots level through a series of diagnostic case studies in selected *ejido* communities. In order to develop local understanding of these issues and strengthen local capacity for land-use planning we invited members of local communities to join the field team conducting the case studies and provided training in participatory rural appraisal techniques.

### 3.1. Environmental conditions

Today the Calakmul Biosphere Reserve can be described as a patchwork of mature, disturbed tropical forest, secondary growth vegetation of less than 25 years, and savannah type flood plains. It is transitional between the northern dry, scrub forest found in the neighboring state of Yucatan and southern rain forest of the Guatemalan Peten. Rain falls mainly from May to October with tropical cyclones and hurricanes hitting in August, September and October almost every year. Forest fires occur frequently spreading from the burning of agricultural fields or as a result of lightning. During the driest months of March and April many trees in this forest lose their leaves (Pennington and Sarukhan, 1968). In its original form the forest was

characterized as high tropical semi-evergreen interwoven with other types of forest ranging from high tropical evergreen to medium high tropical semi-evergreen (Miranda, 1958). Only a small percentage of the original high forest survives today. The present state of the forest within both core and buffer zones, as well as in the communities that surround the reserve, is the result of timber extraction, forest clearing for agriculture and cattle grazing. The most abundant species found in the forest is the sapodilla tree, regionally known as chicozapote (*Manilkara zapota*) harvested for latex, regionally known as chicle.

The basic vegetative composition of the Calakmul forest reflects anthropogenic disturbance and possibly even management by human populations extending back to ancient times. Martínez and Galindo-Leal (2002) suggest that the abundance of big-leaf mahogany (*Swietenia macrophylla*) found in the region prior to the intensive logging of the mid-20th century may have been due to clearing of the forest for settlements. Trees felled in the early and mid-1900s in the Calakmul area were reported to have been massive in size. Mahogany is a shade intolerant, emergent tree species that requires significant amounts of sunlight for growth and regeneration. Studies in the neighboring state of Quintana Roo have found that Mahogany regenerates best on soils cleared by machinery or intense fire. According to Snook (1998) young mahogany seedlings cannot survive the high level of competition from individuals of other species found in the overstory and understory of the forest, so silvicultural management, or disturbances (in close proximity to seed trees) such as the shifting agriculture traditionally practiced by the Maya, are required.

### 3.2. Population dynamics

Beneath the forests of the reserve lie the ruins of the Classic Maya Civilization that prospered with high population densities from 250 to 800 AD. Ongoing debates about the causes for the decline of the Classic period include political and economic explanations as well as ecological ones, which may have led to unsustainable stress on cultivable land and caused the shift of power to the northern region of the peninsula (Sabloff, 1995).

Scattered Maya settlements probably existed in the region since the decline of the Classic period (Sharer,

1994; Antochiw, 1997; Haenn, 2002). At the time of the conquest the southern lowland forests were thought to be uninhabitable by the Spanish so provided a safe place of refuge for Maya resistance (Jones, 1989, 1998). In the late 1800s and early 1900s large concessions were granted to both foreign and national interests for the logging of hardwoods and the extraction of latex. Logwood (*Haematoxylum campechianum*) was exploited to meet market demand for the deep colored dyes it produced until a synthetic was developed in the early 20th century (Acopa and Boege, 1998). These same forests supported concessions providing volumes of timber primarily mahogany and Spanish cedar. Chicozapote trees (*M. zapota*) were exploited for latex. U.S. manufacturers used the latex, known regionally as chicle, once used by the ancient Maya to make the balls for their games, as a base ingredient in chewing gum. Seasonal work camps were established in the region for chicle extraction and logging camps and sawmills for extraction of hardwoods. Many of the loggers and sawmill workers who arrived in 1940s to fell, process and export hardwoods from the region were Yucatec Maya from northern Campeche and the state of Yucatan brought to the region by Alfredo Medina, founder of the timber company, Caobas Mexicanas (Benjamin, 1951). Many of these people stayed and settled in the region.

In addition to logging and chicle tapping some people cut and sold railroad ties. This activity provided an important source of income to Yucatec Maya communities in the neighboring state of Quintana Roo but was also practiced in the Calakmul region through the 1980s. Railroad ties were sold to a distributor through a local campesino organization (an early version of the Regional Council mentioned in the following section). Fig. 2 is a drawing done by a resident of one of the *ejido* communities that participated in the case studies and illustrates the history of that *ejido*. As the story unfolds through the drawing the informant describes some of the highlights in the history of the community including the cutting of railroad ties (*durmientes*) from timber felled in the forest. The income generated by this activity funded the delivery of water to the *ejido* by truck (*pipa*) when no other sources of water were available.

In Mexico during the 1960s, 1970s and 1980s national policy and government campaigns encouraged conversion of the vast, underutilized tropical forests of





Fig. 2. Illustration of the history of the *ejido* Nueva Vida as told by a resident.

the south into agricultural frontier (Acopa and Boege, 1998; Arizpe et al., 1996; Gates, 1993). This was done through the disbursement of *ejido* lands. Referring back to Fig. 2 we can see how population tended to fluctuate in this *ejido* during the early days of its formation. The drawing tells of a drought that occurred in 1984, which caused people to leave the area because they were unable to find water. This drought was in fact so severe that almost the entire population abandoned the *ejido*. As the drawing of the deer and the pheas-

ant shows, even the forest animals were desperately seeking water. The drawing goes on to tell that slowly people began to return in 1986. The drawing also describes a struggle for control of the *ejido* involving a group that arrived shortly after the end of the drought who challenged the existing residents and attempted to throw them out of their homes. Needless to say, the invading group did not succeed. Later another group of migrants from the state of Veracruz arrived with papers signed by officials of the agrarian office in their

home state indicating that they had been accorded the rights to these lands. In fact many of the settlers who arrived in the Calakmul region had been directed to the area by the agrarian reform offices in their states of origin without confirmation of existing settlements. These people from Veracruz, however, planned to retain their residencies in Las Chuapas and use the *ejido* land as a place to farm without ever permanently settling there. Even though the existing settlers welcomed them because they were good people (*buena gente*) the informant told us that they never spent much time there and eventually stopped coming at all.

Landless settlers arriving from almost every state in Mexico established *ejidos* and private land holdings in the Calakmul region during the 1970s and 1980s. These colonists were drawn to the region by the abundance of forest resources, availability of land, and the tranquility of a sparsely populated frontier. Many had been forced out of their places of origin by lack of economic opportunities, scarcity of land, social unrest and displacement by large-scale agricultural projects or ecological disasters. Most of the region's inhabitants had lived in a variety of different places prior to settling in the Calakmul area contributing to the characterization of these people as *desarraigados*, meaning uprooted. At the time the Calakmul Biosphere Reserve was established in 1989 there were approximately 72 *ejidos* in the region. By 1995 the number had grown to 114.

In the early 1990s there was an influx of Chol and Tzeltal Maya fleeing the social unrest and military build-up caused by the Zapatista movement in the neighboring state of Chiapas. Population growth rates for communities with high percentages of these ethnic groups exceeded the region's four percent growth rate during the early 1990s (Ericson, 2004). When the Calakmul municipality was created in 1997 as the first "ecological" municipality in the state of Campeche, so termed because it contained the Calakmul Biosphere Reserve and its adjacent lands, a new type of people began to arrive in the region, white-collar workers employed by the government or working in the tourism industry and its related services.

The great diversity of cultures, customs, languages, and religions<sup>6</sup> in many of the Calakmul *ejidos* coupled with difficult ecological conditions such as shal-

low, unproductive soils, and little surface water created a challenging landscape for early colonists. Murphy (2003) writes that in spite of their shared status as *desarraigados*, residents of the region tend to focus more on the differences between them "using highly elaborated discourses of ethnic distinction to describe each other". Residents acknowledge that it is these differences that make it hard for them to work together for any purpose, social, political or economic, especially within their *ejidos*.

For example, men from the state of Tabasco were considered to be particularly violent, and when they fought, were reputed to use machetes. Women from Tabasco were also considered prone to be violent and to take lovers boldly and often. People from Chiapas are also considered to be violent, and, like people from the north of Mexico, capable of pulling out a gun when angered. Yucatec Maya people from Campeche (men know as *mayeros*, the women as *mestizas*) were considered to be *tranquillos*, not to seek conflict unnecessarily. When conflict between men arose, Yucatec Maya people told me, it was usually when they had been drinking and could be resolved in a fistfight that would not result in serious injury to anyone. Chol Maya women were considered to be particularly submissive to their husbands, as evidenced by the hard labor they did, carrying large loads of firewood, for example, and their acceptance of polygynous marriages. According to Haenn, Chol Maya, in turn, describe *mestizos* as "fierce (*bravos*) and Godless (1999)." (Murphy, 2002)

### 3.3. The integrated conservation and development approach

Since the foundation of the Calakmul Biosphere Reserve conservation programs working in this region have sought to link the preservation of biodiversity and natural resources with the needs of the people living in the surrounding communities. International conservation organizations, in collaboration with national and regional conservation organizations, have worked to-

<sup>6</sup> In one of the case study *ejidos* where we worked, which had a population of 398 inhabitants at the time of the study, there were five

religions present: Catholic, Seventh Day Adventist, Jehova's Witnesses, Pentacostles, and los Sabaticos (not sure of the translation). In this same *ejido* nine different languages were spoken including Spanish: Chol, Tzotzil, Tzeltal, and Yucatec Maya, Zoque, Popoluca, Totonaco, and Nahuatl.

gether in Calakmul to strengthen reserve infrastructure and increase local participation in reserve management under the integrated conservation and development model. With the **primary goal of conserving biodiversity by reducing deforestation and fragmentation**, “eco-development” projects such as organic agriculture, apiculture, and agroforestry have been implemented to **generate economic incentives for resource conservation** and foster effective stewardship of natural resources. There have also been interventions in the forestry sector that emulate the *ejido*-managed, social forestry model pioneered in Quintana Roo, the *Plan Piloto Forestal*. These programs have contributed to an already heavy political climate of federally sponsored conservation and development projects introduced primarily by the PRI party (Institutional Revolutionary Party) long before the foundation of the reserve. Some of the support to the region has been channeled through the *ejido* system. Haenn (2002) points out that the *ejido* system facilitated a connection between Calakmul residents and government sponsored development aid as early as 1975 when corn production was assisted by credits from the state.

Although **the region has been overrun with government sponsored programs and conservation and development programs**, basic infrastructure has been slow in coming. Latrines are a rare occurrence, some *ejidos* are without electricity, and having enough water to drink and stay clean is always a problem. The history recorded in Fig. 2 includes the construction of two water catchment ponds, called *jagueyes*, which along with another device called an *alhibe*, also designed to catch rainwater, provide the primary sources of water for home use in almost all of the region’s *ejidos*. This particular *ejido* had to borrow money from its wealthier members living in Veracruz to cover the costs of constructing the two ponds.

A major channel for aid to the region’s residents after the establishment of the reserve was a local *campesino* organization, the **Regional Agriculture, Forestry, Animal Husbandry and Service Council of Xpujil**, informally known as *el Consejo Regional* or the Regional Council. This organization was supported by both state and federal agencies of the Mexican government as well as the Canadian government through its Model Forest Program and is comprised of two representatives from each member *ejido*. In the early to mid-1990s the director of the reserve

played an important role as an advisor to the Regional Council.

### 3.4. Research process

In this climate of integrated conservation and development programs the idea of community participation in research and planning was not new. In fact conservation practitioners and graduate students had already introduced participatory rural appraisal techniques to a few of the region’s *ejido* communities (Pronatura, 1992; Richardson, 1995; Ericson, 1996). But this was the first time a team comprised primarily of local people had been formed to conduct case studies in the *ejido* communities, and that the results of their work would contribute to a larger program. Including local people on the field team created an opportunity to increase the capacity of those individuals to participate in region-wide dialogue and helped to foster local ownership of the larger process. One of the expectations of the P-E Program was that these individuals would later lead a land-use planning team developed through the dialogue process and the need for region-wide and community-level planning. In selecting team members for participatory rural appraisal it is important to **ensure that a diversity of perspectives and experiences are represented** (Schoonmaker Freudenberger, 1994). The six-member field team was carefully composed to reflect diversity of gender, age, ethnic origin, and educational background. Three members of the team were *ejidatarios* who played active roles in the social, economic and political development of their communities. One was a rural health worker originally from Chiapas who had lived most of her life in the region. All spoke Spanish in addition to the Chol or Tzeltal Maya languages. My assistant, a social anthropologist of Yucatec Maya origins, and I coordinated the team.

The first thing we did together was to take an intensive week-long training session conducted by a non-governmental organization associated with the University of Yucatan, the Grupo DIP. This training provided us with the tools we would use for data collection in the case study communities and prepared us to work together as a team. In addition to learning how to facilitate exercises that would later produce maps, diagrams, seasonal calendars, etc., we focused on interview skills. Conducting effective interviews is



	Theme	Objectives
1	Migration & changes in population over time.	History of the community & how it was founded; how migrants learned about the location of the community; migrant's reasons for arriving; where they came from; how long they tend to stay; why those that choose to leave the community do so.
2	General & reproductive health among community members.	Type of health services available in the community; health conditions and illnesses commonly occurring among community members; how illnesses and health problems are treated; problems encountered among pregnant women; the level and understanding regarding reproductive health; the woman's role in the community.
3	Land use and exploitation of natural resources.	Use and type of forest on community land; animal & soil resources; methods of natural resource exploitation; economic importance of production activities; resource relations between <i>ejido</i> communities; causal factors leading to changing land use patterns.
4	Planning mechanisms and discussions about the future at both family and community levels.	How community members intend to manage land distribution once their sons are grown and in need of land for crop cultivation; current internal community laws with respect to new migrants and land distribution; how recent migrants are treated; the decision-making process regarding location and amount of land available to recent migrants.

Fig. 3. Themes and objectives of diagnostic case studies.

challenging even to those of us with academic or professional experience in data collection so was doubly difficult for the local members of the team, most of whom did not even have the equivalent of a high school education. The participatory rural appraisal training we received required us to make distinctions between inductive and deductive question types. We found the formation of inductive questions like, “*What does your agricultural plot contain?*” to be more difficult than formation of deductive types that condition the response and thus provide less information, such as, “*Does your agricultural plot contain forested area?*” In order to be rigorous in our application of the methodology we sought to learn these distinctions and had a lot of fun trying, although once we began work in the field, consistency amongst team members varied widely.

Of the 114 *ejido* communities located in and around the Calakmul region we selected 3 for participation in the case studies. Selection was based on a **matrix of criteria**, including population growth rates, ethnic composition, and geographic relation to the reserve. Each contained a unique mix of ethnicities representative of southeastern, northern and central Mexico and had ex-

perienced rapid population growth rates from 1990 to 1995.

The fieldwork we carried out as a team averaged 14–21 days of residency in each community. Early in the process we selected four research themes to assist us in focusing the research (see Fig. 3). As a team we reviewed these themes each time we entered a community and developed a set of guiding questions to be answered through the period of interaction with the community.

At the end of the period of residency in a given community we invited the members of the community to an exposition of the maps, diagrams, matrices, and calendars that had been prepared by the community residents themselves, and in so doing generated discussion about the research themes. Later, after compiling all of the materials produced by the community we set to work reducing the size of the diagrams and drafting accompanying text for inclusion in a bound volume with photographs. The text explained the research process and included information taken from semi-structured interviews conducted with community residents during fieldwork. It was carefully written and discussed

by the team to ensure that local audiences would easily understand.<sup>7</sup> The completed volume was presented to the community by way of the governing assembly (*asamblea*) for additional editing and final approval.

Allowing the community to edit and approve the document prior to its being made available to outside groups was an important step in the overall process.

The results presented within these volumes were promoted for their value as educational and planning tools for internal use by community members or for sharing with outside groups.

Each community's experience of editing and authorizing release of the results of the fieldwork was different, and in one of the *ejidos* this process generated significant discussion. In fact some members of this community called for the document to be maintained as internal and confidential. The reason for this position was due to the inclusion of historical facts viewed by these residents as unfavorable. In general residents of this community were particularly concerned about the image they projected to outside groups. The community had been the recipient of a significant amount of attention from conservation groups, and quite a few of its residents had been or were currently employed as rural extension workers (*promotores*). Finally, after removal of the controversial material, the *ejido* authorized release of the document, and any possible impact to the community's image was avoided.

### 3.5. Degrees of participation

As discussed in the section on methods there are numerous types of participation, the most desirable being the highly active, collegial and self-mobilizing forms, wherein problems and solutions are identified and carried out by the community, and the least desirable being the contractual, passive forms, wherein local people are silent partners and donors of information. The type of participation demonstrated by a given group can remain constant over the life of a project or it can evolve and change. A study conducted in

Ecuador looked at the participation of selected local groups involved in the planning and implementation of conservation programs in the Cayambe-Coca Ecological Reserve. It showed that while many of these groups began by demonstrating a moderate level of community participation in the programs most of them either remained at that level or became less active over time, shifting toward contractual and even passive forms of participation and ending up less engaged than when the program started (Ulfelder et al., 1998). The results of this study reveal a tendency that is often seen in conservation programs across rural parts of Latin America and Asia.

In order to better analyze use of the participatory approach in the case of Calakmul, I shall focus on three stakeholder groups and show how the type of participation demonstrated by these groups may or may not have changed throughout the life of the project. These groups are: (1) the members of the *ejido* communities that served as case studies, (2) the local residents who joined the field team conducting the case studies, and (3) the national and international conservation organizations (NGO's) who coordinated the program. The in-country coordination team comprised of my assistant and me, in addition to an in-country project advisor, liaised between these three groups. Other stakeholders including the state and local government were involved but their roles remained somewhat limited. Overall the project included seven phases (in addition to preparation and follow-up) that lasted approximately 3 years (see Fig. 4). Some of these phases overlapped or were conducted simultaneously.

#### 3.5.1. Community members

As previously noted the impetus for this project did not come from the communities themselves nor did it come from the conservation organizations involved, instead it came from the director of the reserve, Deocundo Acopa, a man who demonstrated steadfast faith in the integrated conservation and development approach and who considered himself an advocate of both the local residents and the forests that housed them. He was a gifted leader and had a special talent for coordinating the interests of diverse groups, including those of foreigners bringing financial and technical assistance to the region.

The communities that participated in the project were identified through a process of regional analysis

<sup>7</sup> This has been one of the most challenging parts of the work due to the difference in educational levels and cultural perspectives amongst team members. Local resident team members become the mentors of the non-local team members because their perception of rural realities is closer to that of community members.



Steps and Activities	Actors Involved	Time Period
<b>Preparatory Phase</b>		9 months
Draft and circulate concept paper	In-country liason/advisor, national NGO staff; international NGO staff	
<b>Phase 1</b>		5-6 months
a). Identify funding source b). Define objectives and circulate work plan, including selection of methodology c). Conduct regional assessment (secondary sources and key informant interviews) d). Select case study ejidos e). Select field team members	Field-based project coordinator; in-country liason/advisor; national NGO staff; international NGO staff	
<b>Phase 2</b>		2 months
a). Training of field team members in PRA methodology b). Definition of case study objectives	Field team; in-country training team (Grupo DIP); field-based project assistant; field-based project coordinator	
<b>Phase 3</b>		9-10 months
Conduct and document diagnostic case studies in 3 ejidos	Community members; field team; field-based project assistant; field-based project coordinator	
<b>Phase 4</b>		3-4 months
Analysis of case study results	Field team; field-based project assistant; field-based project coordinator; in-country liason/advisor	
<b>Phase 5</b>		4 months
Discussion of analysis and next steps	Field team; field-based project assistant; field-based project coordinator; in-country liason/advisor; national NGO staff; international NGO staff	
<b>Phase 6</b>		5 months
Dissemination of results and recommendations of overall study (case studies and regional assessment) through presentations in various forums (regional, state, national and international)	Field team; field-based project assistant; field-based project coordinator	
<b>Phase 7</b>		2 months
Design population monitoring system for the region	Field-based project assistant; field-based project coordinator; U.S.-based consultant	
<b>Follow-up Phase</b>		6-8 months
Planning and securing funding for next steps	Field team members; in-country liason/advisor, field-based project assistant, conservation NGO's	
Note: Total project time, not including follow-up, was three years. Some phases were overlapping.		

Fig. 4. Phases in the development of the applied research program.

conducted by the coordination team, in consultation with key governmental and non-governmental stakeholders in the region. The analysis pinpointed hotspots of population growth, diversity of production activity and local NGO presence. Not all of the communities invited to participate accepted the invitation. One rejected it because its members felt that the information

generated might expose them to unnecessary scrutiny. This *ejido* community was one of the few ethnically homogenous communities in the region representative of the Chol Maya group. Many of its residents were refugees who had fled the civil unrest in the neighboring state of Chiapas and were wary of outside influences. Even though this community opted not to be-

come a case study *ejido*, one of its *ejidatarios* became a member of the field team.<sup>8</sup>

The participation of the three communities that acted as subjects for the case studies was concentrated in the third phase of the project as shown in Fig. 4. The type of participation demonstrated by the residents of these communities contained elements of both the consultative and collaborative forms.<sup>9</sup> The communities themselves did not generate the idea for the applied research program, and data was collected by the field research team and analyzed outside of the community, as is characteristic of consultative participation. Input and support from community members was critical in responding to the research questions generated by the field team. The maps, matrices, diagrams, calendars, semi-structured interviews, and community-level reflection provided the raw data for the conceptual analysis that was later presented to a wide array of regional, national, and international stakeholders. However, the communities were also involved in the development of the final recommendations of the analysis through informal discussions and directly involved through their representatives working on the field team, revealing elements of collaborative participation. Except in instances when the community itself generated solutions to problems identified, the type of participation demonstrated by community members did not change much throughout the case study process.

### 3.5.2. *Members of the field team*

Community participation was enriched by the placement of representatives of the case study *ejidos* on the field team.<sup>10</sup> The participation of the field team began during the second phase of the project with training and definition of project objectives, and continued through the dissemination of results in phase six (see Fig. 4). The type of participation demonstrated by members of the field team, both local and otherwise, shifted back

and forth between collaborative and collegial throughout the process. It can be characterized as collaborative because the field team did not generate the idea for the applied research program but field team members were fully engaged in the case study research. It was a slow, intensive process in which all participants learned a considerable amount about the subject matter, and about their own abilities and limitations as well. Field team member participation was also collegial in nature because, as noted earlier in this paper, one of the primary objectives behind the incorporation of local people on the field team was to strengthen the capacity of local residents to represent their communities in regional dialogue, and to enable them to take a more active role in land-use planning and the development of policy frameworks. The description of participation “among colleagues” in Fig. 1 highlights the strengthening of local capabilities to enable local groups to carry out their own conservation or development projects.

In addition the team operated under a strictly democratic policy. Decision-making power was shared as among equals and everyone was encouraged to contribute opinions in discussions. This was aided by the fact that I, the team coordinator, was a foreigner, and although somewhat familiar with the region already having spent a year and a half living in rural communities on the Yucatan Peninsula, knew relatively little, in comparison to their lifetimes of experience, about daily survival in rural Mexico. Thus, the local members of the team became my mentors regarding *ejido* life and I maintained a learner’s attitude, providing guidance only when necessary.

### 3.5.3. *Conservation NGO’s*

Although it may seem a bit unusual to evaluate the participation of the organizations sponsoring the program, it was changes in their level of participation that would prove crucial to the final outcome of our efforts. Through completion of the applied research program and dissemination of results and recommendations, the type of participation demonstrated by the conservation NGO’s was consistently collaborative and collegial. The commitment and interest of these groups and the donors that supported them, including the University of Michigan Population Environment Fellows Program, of which I was a fellow, was constant throughout the 3 years of the project, facilitated by strong leadership in Washington DC, Mexico City, and Merida,

<sup>8</sup> This member of our team took a particular interest in drawing and spent hours replicating and reducing the size of many of the drawings, originally produced by community members on small cards or large sheets of paper, to standard size paper for inclusion in the case study volumes.

<sup>9</sup> Please refer back to Fig. 1 for definitions of participation types.

<sup>10</sup> One of the communities was not formally represented on the team because many of the residents of this community were field agents of the local conservation NGO so had a chance to provide input at various points in the life of the project.

Yucatan. Our in-country advisor based in Xalapa, Veracruz, made numerous trips to the field and played an important role in keeping us on track with our original objectives.

However, both the commitment and interest of these groups changed dramatically upon completion of the objectives of the applied research program, leaving only partially complete the objectives of the overall P–E Program which included development of a participatory land-use planning process. The applied research program had set the stage for initiating this process by preparing local and regional stakeholders and generating dialogue on the topic, but more work was required to actually put a land-use planning process in place. Thus, the type of participation demonstrated by the conservation organizations fell to an almost passive level at a crucial moment in the project. Institutional shifts in leadership and priorities resulted in a lack of follow-up on various levels. These changes will be discussed in more detail in the following section.


#### 4. P–E Program results

The applied research program wrapped up with presentations before a variety of forums, including the technical advisory committee of the Calakmul Biosphere Reserve. The conclusions of the analysis substantiated existing concern over the delicate balance between regional development and conservation of natural resources, which was put at risk by a rapidly increasing population and lack of planning experience at both regional and community levels. Recommendations included: (1) aligning conservation and development efforts through the integration of municipal development plans with the management plan for the reserve and some form of regional land-use plan; (2) forming committees of *ejido* members to discuss how this could take place; (3) designing an efficient, cost-effective population monitoring system to enable people living in the region to better understand how many migrants arrive and where they establish themselves; (4) paying attention to the overly high rate of natural population increase in the region and lobbying to improve coverage of reproductive health programs; (5) integrating planning and coordination at all levels (community, municipal, state and federal); (6) establishing incentives for local people to conserve natural resources and strengthening

their decision-making capacity at levels beyond just the community; (7) encouraging discussion and reflection in the *ejidos* around issues of population and the environment to encourage greater participation in regional development and increase social harmony. These recommendations generated a fair amount of discussion but required a greater investment of financial resources and institutional support to be realized.


A three-part proposal outlining directions for further work was drafted to obtain funding from the conservation, rural development and population sectors. Building on the recommendations cited above, the proposal focused on the development of a land-use planning team comprised of the community members who had participated in the case studies, regional level officials and experts in land-use planning; a reproductive health component to be carried out in partnership with a professional reproductive health organization that could bring experience working in rural areas with challenging logistics; and the implementation of a pilot population monitoring system coordinated under local leadership and carried out by residents of the region. With the drafting of the proposal my 2-year fellowship ended and a request for a 1-year extension was denied due to shortage of funds, so circulation of the proposal became the responsibility of the local conservation organization that had been a partner in this program from the start, Pronatura Peninsula de Yucatan, A.C. (Pronatura). Regrettably, in this moment when follow-up was crucial, Pronatura was undergoing internal administrative difficulties, which shortly thereafter led to a scaling back of institutional programming in Calakmul, and influenced the confidence of international organizations looking to partner with Pronatura in Calakmul.

The three-part proposal was never funded despite continued efforts during the following year. Although several organizations were interested in continuing the work that had been initiated under the P–E Program, ultimately none of them stepped forward to provide the necessary funding or leadership. A couple of years later, under a revised scope of work that reflected a different set of priorities, the University of Michigan Population–Environment Fellows Program initiated a second Population–Environment Program in Calakmul in partnership with Pronatura. By that time Pronatura had reorganized under new leadership and the new Population–Environment Program was designed to focus on health and water issues.



The results of the applied research program stimulated a considerable amount of discussion within the lead conservation organization, the World Wildlife Fund (WWF), and inspired the addition of an important new component to be included in its internal strategic plan. This new component focused on developing and strengthening policy frameworks to foster conservation in the Calakmul Biosphere Reserve. Three types of policy frameworks were identified: **population, conservation, and development.** This was the first time that population policy had been identified by the WWF Mexico Program as a biodiversity conservation strategy.

However, as fate would have it, the conclusion of this initial 3-year portion of the project coincided with a broad institutional shift within WWF, and a redistribution of financial resources toward protection of geographic areas identified as priority ecosystems. This shift was based on an assessment of the conservation status and biological distinctiveness of terrestrial ecosystems in Latin America and the Caribbean (Dinerstein et al., 1995). Within the Mexican portfolio, Calakmul and the larger Maya Forest, located in Guatemala and Belize, were not identified as seriously threatened sites, within the tropical moist broadleaf ecosystem they represent, based on their conditions of relative intactness. The urgency of protecting other areas within Mexico such as the Chihuahuan Desert of the north and the Sierra Madre of central Mexico increased with their identification as highly threatened sites.



## 5. Strengths and weakness of the participatory approach

Among its many strengths the participatory approach **affords local people a role in research and planning.** It also **creates an opportunity for self-reflection among community members that can initiate a process of change enabling them to identify their own needs and seek their own solutions.** And, in contrast to traditional research and planning methods that rely on interview forms and questionnaires, it increases rapport between outside groups and their informants through the use of visual exercises like maps and diagrams that require a some measure of trust to produce, share and interpret.

However, as both a research technique for social science investigation and as a **capacity building tool for improving the lives of local populations** the participa-

tory approach has been criticized for its **vagueness and lack of rigor** (Little, 1994; Campbell, 2001). Recently, in response to its overwhelming popularity and unconditioned acceptance particularly by development practitioners, participatory development has been described as tyrannical, as a **facilitator of the unjust exercise of power** (Cooke and Kothari, 2001). In his introduction to a collection of critical essays Bill Cooke writes, “that tyranny is both a real and a potential consequence of participatory development, counter-intuitive and contrary to its rhetoric of empowerment though this may be” (2001:3). Based on the use of a participatory approach and participatory rural appraisal techniques in the Calakmul Biosphere Reserve, the paper will now address some of what I perceive to be the strengths and weaknesses of the approach itself, and specifically of its use within the context of a conservation program.

In our case, one of the important strengths of the approach was that incorporating representatives of local communities into the field team helped us **form local collaborators who joined the effort to increase understanding of the** dynamics of migration and land-use in the region’s *ejido* communities, and who, we hoped, would later take active roles in community discussions and regional policy dialogue. Part of the team’s training in participatory rural appraisal techniques included learning to facilitate group activities and conduct interviews, both of which required good listening skills. One of the basic principles discussed in the methods section, “handing over the stick”, provided a useful method for improving one’s skill in listening to others regardless of whether or not one agreed with what was being said. Essentially handing over the stick is the symbolic act of giving an informant the opportunity to tell his or her story without interruption. Doing this was especially challenging for local team members because, as residents of the region, they each had their place in the local hierarchy. And, sometimes they simply felt more knowledgeable than the informant about the topic being discussed. For example, one of the team members was particularly well-versed in forest conservation techniques and preferred to use interviews and map drawing sessions as an opportunity to advise informants on how they should be managing their land.

Another important area where we built capacity was in valuing and distinguishing diversity of experience. Through the concept of triangulation participatory rural appraisal encourages variation in the types of in-

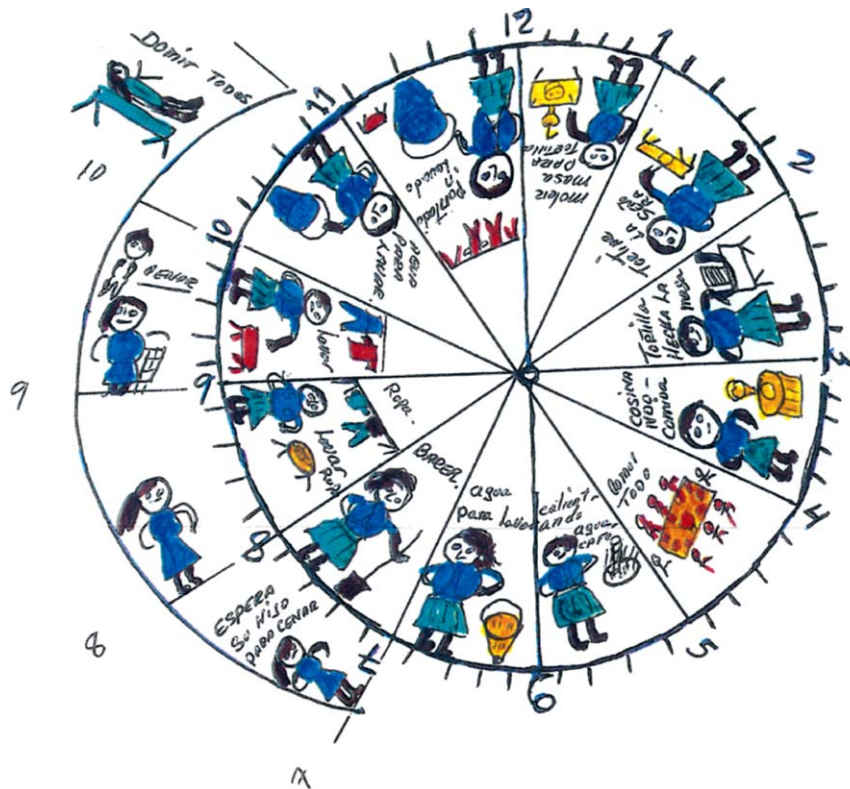


Fig. 5. Illustration of activities in a day in the life of a local *campesina* woman.

formants interviewed. This quickly led to recognition of the differences between men's work and women's work, which made for interesting late-night discussion between team members, when closely held opinions were most often revealed and life stories were shared. Interviewing women on any subject was something new for the male members of the team. And, although we generally sent female team members to work with female informants especially on sensitive issues such as reproductive health, one of the men especially enjoyed interviewing women about their daily routines and helping them capture this information in drawings in the form of a clock (see Fig. 5). Through this experience this particular team member became more sensitized to women's activities and unashamedly told us one evening that he had not realized how busy women were carrying water, cleaning, and preparing tortillas for the family from early in the morning until they fell asleep at night. He added that he was going to try and help his wife, who had six children, more from now on.

Another strength of the participatory approach comes from the process of reflection generated through use of visually based techniques, such as those offered by participatory rural appraisal. In the act of constructing diagrams information is presented in an easily understandable form, and in thinking through what is being expressed participants undergo a process of reflection-based analysis (McCracken, in Campbell, 2001). In one community where we worked use of these techniques formed the basis for planning discussions among community members through reflection about observed population trends and resource use. Group reflection facilitated mutual understanding among several community leaders, in this instance, and created a forum for exchange of ideas and opinions. The technique used was a matrix for determining historical changes. The group was asked to identify important periods in the history of the community and the natural resources used for survival and income generation. Piles of beans were used to quantify change over time.



Through the exercise of creating this matrix participants recognized the remarkable speed with which the population of their community had grown over the past couple of decades. They were then asked to make projections into the future about where the growth might lead and how it would affect resource availability if it were to continue at the same pace. The exercise was useful for sharing information not only with us as outsiders but with other community members of the same community, and it inspired a higher level of discussion in the *asamblea* among land-holding *ejidatarios*. As a result of the discussions an *ejido*-wide policy was introduced to limit the number of newcomers admitted to the *ejido* in coming years.

In addition to the strengths already mentioned, some key weaknesses of the approach came to light during the Calakmul experience. After completion of the case study research and release of the results the team began discussions about how to prepare the results for presentation to groups beyond the community level. The institutions supporting our work expected an analysis that could be used to inspire dialogue at many levels. Synthesizing results began as an arduous process because local team members had never been exposed to the type of rigorous analysis we needed to engage regional and policy level audiences. Our training in participatory rural appraisal techniques fell short in this area and offered no suggestions about how to begin given the wealth of information that had been generated through the case studies. Participatory rural appraisal techniques focus on the aforementioned reflection-based type of analysis conducted with communities in order to encourage local solutions. It does not elaborate on other types of analysis. Consequently my assistant and I drafted major portions of the analysis according to our own style using highlights of the regional study I had conducted on my own during the earliest phases of the program as a framework. Development practitioners of participatory rural appraisal acknowledge that it is difficult to maintain information that represents the opinions of local populations when “the higher up the information moves, the more it will be filtered and presented in different ways to suit different audiences” (Guijt and Braden, 1999). In our case, because we had made the commitment to increase local capacity early on, we tried to maintain the participatory nature and integrity of the process as best we could by soliciting input from the entire team


and discussing all conclusions and final recommendations with them before presenting the analysis to wider audiences.

Participatory initiatives have also been criticized for their ability to raise expectations in local communities by creating forums for people to voice their concerns and discuss solutions. The presence of outsiders facilitating these discussions can cause community members to think that the outsiders may have the means to solve all of the problems raised by the community during the process. This is a very difficult challenge to overcome. Even in our case in which the majority of the team was comprised of people from the communities themselves we still had to explain over and over again that we could not provide expertise in soil analysis, or much-needed clothing for the children, or trucks to carry water from the pond located a mile and a half outside of the community.

Fig. 6 compares the interests, roles, levels of understanding and preparedness of local residents with the outsiders who most often facilitate participatory initiatives.<sup>11</sup> To some extent these differences determine how the process takes shape. For example due to a lack of familiarity with systematic research, participatory or academic, it was a challenge for the local members of our field team to maintain objectivity in data collection and analysis especially when the interview topic focused on something team members had intimate knowledge of, such as agricultural land-use techniques or forestry conservation practices. Local interviewers frequently lost track of their role as interviewer and entered debates with informants introducing personal judgment and interpretation to the interview process.

In most cases conservation programs, even community-based conservation programs, do not opt for integrating local people into field research teams because of the costs that arise when working with people of limited scholastic background. Multi-lingual people without formal educations are often self-taught, and while they can usually read and write well, the pace of working with these people is slow, especially when tra-

<sup>11</sup> This comparison is derived from discussions with Reyna Sayira Maas Rodriguez who was a member of the coordination team and assisted me throughout this process. Having been raised in a rural village herself, and later acquired a degree in social anthropology, Sayira was very aware of the challenges that local members of the field team faced.



Local Participants (community members)	Participants arriving from outside the region or the community (conservation organizations and donors)
1. Interests are related to improving livelihoods and meeting basic needs, such as obtaining technical and financial assistance to improve agricultural production; using available natural resources to generate income.	1. Interests reflect institutional policies and needs based on a global vision (eg. to broaden, and document understanding in order to reorient and improve conservation programs in the region and beyond).
2. Level of community participation in a process based on concepts that are relatively new to them is generally low. It can be difficult for community members to maintain interest when the benefits of the process are not clear.	2. Sophisticated professional and technical background allows them to manage and facilitate the process. It gives them the advantage of anticipating and calculating next steps, while possibly limiting the ability to accept results that may be different from those expected.
3. In addition to participating as providers of information they are often viewed as the subjects, or objects, of a transformative process. Their participation is largely determined by the outside facilitator's vision and by their previous experiences.	3. The participation of process facilitators is characterized by their roles as facilitators. The nature of the process is largely defined by the facilitator's vision, which reflects to varying degrees the institutional vision behind it.

Fig. 6. Comparison of interests, roles and levels of preparedness among participants.

ditional documentation skills are required. In our case local team members put large amounts of effort into learning the basic characteristics of the methodology and participating in field documentation and analysis of results. A significant investment of time and patience on the part of field-level coordinators was also required to continually remind team members of key concepts, such as the importance of triangulating data by varying tools used and informants consulted. One of the team members had only an elementary school education to draw on and had essentially taught himself how to read and write Spanish. His native language was Chol. When he wrote he spelled words phonetically, which made reading his field notes a bit challenging. But he was exceedingly conscientious and spent hours working on his field notes. And I, being very interested in his perspectives, which I found particularly valuable, spent hours reading them. Developing the group facilitation skills of team members was also a time-consuming process requiring modeling, teaching, and supervising group processes.

Additionally, there are risks involved with using a participatory approach. What would have happened if the community that initially hesitated to authorize release of the documentation of fieldwork results had decided not to authorize the release? Of course, we would have been bound by our agreement to respect their judgment, meaning we would have had to accept a loss in the investment of time and funds that had enabled our work in that community. But, more important than this example is the possibility that the interests, opinions, and needs of local people may run counter to the ex-

pectations, capabilities and objectives of the facilitating organizations.

Finally, as shown in the discussion of participation types, the most egalitarian way for a participatory initiative to develop is for the need to be voiced by the local population itself. However, the concerns of local populations are most often related to poverty alleviation, development and livelihood issues. This raises something that is not so much a methodological weakness as it is a problem of compatibility between the participatory approach and its use within the context of biodiversity conservation programs. It is more difficult to imagine a rural village voicing a need for ecosystem protection or preservation of a keystone species, unless of course that species has particular economic value. Rural populations living in biodiversity-rich areas usually do not perceive a crisis or threat to critical ecosystems or species unless the threat is clearly linked to their own livelihood, culture or survival.

## 6. Conservation and development: a critical relationship

Through the experience of integrating the goals of conservation and development questions have been raised on all sides. In recent years natural scientists especially in the northern hemisphere, spurred by the unprecedented rates of global biodiversity loss, have disputed the effectiveness of integrated conservation and development programs and the theory of sustainable use, strongly suggesting that we seek new ways of de-

fending existing protected areas or resort to the age-old “guns and fences” approach to conservation (Kramer et al., 1997; Terborgh, 1999; Oats, 1999). By contrast field-based conservation practitioners and social scientists perceive conservation and development as interrelated and interdependent maintaining their faith in the theory that sustainable use of protected areas by local populations will assure long-term protection of biodiversity (West and Brechin, 1991; Western and Wright, 1994; Painter and Durham, 1995; McNeely, 1995; Brechin et al., 2002). In fact many local level conservation organizations in Latin America embrace a dual mission that seeks to conserve biodiversity and promote sustainable development. Integration is often more evident in the field, in the way life is lived, than it is in a boardroom, classroom or office of a multinational organization. At the grassroots level where survival has a tangible edge, life is whole, and disciplinary differences are not so easily distinguished.

It is important to clarify however that biodiversity conservation is not a form of rural development nor is it limited to soil, water, and natural resource conservation. Meeting the challenge of preserving biodiversity requires a multidisciplinary approach with scientific oversight and adherence to the principles of conservation biology, ecology, genetics, and wildlife management. The integrated conservation and development paradigm is essentially one strategy among many, including implementation of appropriate policy and legal frameworks, land acquisition, and even strict protection, that needs to be tested and proven, monitored and evaluated over time.

Implicit in the analysis presented in this paper is the question of the compatibility of the participatory approach with conservation programs administered by organizations that are not structured to deal with input from local populations and who are driven by specific objectives and limited resources. A truly participatory process requires receptivity to the opinions of those involved in the process. In order to be successful this type of process must incorporate mechanisms to respond to differences of opinion. It is unclear how much consideration local people receive within the framework of a participatory process that exists to meet specific goals and objectives. Although participatory approaches were not designed for use in a biodiversity conservation context their use in programs such as the one described in Calakmul provides insight into the chal-

lenges conservation professionals face in working with local populations living in and around protected areas.

## 7. Implications for participatory conservation

This paper has shared some of the strengths and weaknesses of using a participatory approach within the context of conservation programs. And, it has highlighted how local participation can play an important role within the integrated conservation and development paradigm. The experience in Calakmul raises some important points that require clarification by conservation practitioners prior to using this approach in this context. The following suggestions are offered in hopes of strengthening this type of effort.

### 7.1. Institutional expectations and commitment

It is important to define early in the project cycle whether participation is going to be employed as a means for achieving specific objectives, such as data collection, or as a method for building capacity and empowering the local residents to take greater control over their lives and resources. Ambiguity about this issue can generate tension among facilitators and influence the degree of institutional commitment to the project or process. If the goal is one of capacity building, long-term commitment will be required and mechanisms to ensure continual funding must be in place.

In the Calakmul experience as in others undertaken by conservation organizations we were clear about using participation as a means for extracting data and fostering ownership of the process. However, although we all believed wholeheartedly in participation as a means for empowering local people, and we sought to do this by building the capacity of local team members, we were not clear enough about our long-term commitment to this aspect of the program and we did not understand the risks involved or the investment required for achieving it.

### 7.2. Local expectations and commitment

It is equally important to clarify the expectations and commitment of the local people involved in the process, be they members of a field team or members of a participating community. In most cases local people's time

is divided among various production-related activities some of which may follow seasonal cycles. **Level of commitment will be determined in large part by the benefits perceived from the process.** In the Calakmul experience field team members earned a daily wage for their effort and they gained experience and knowledge through regional travel and exchange of ideas. Members of the communities that participated as case studies did not receive monetary compensation; instead **they received the collective benefit of documenting their shared history and discussing the issues and problems that challenge them.** However, this type of benefit will generally not be perceived as a benefit by all community members and cannot be counted on to guarantee consistent participation in the process.

It was also evident to the researchers that areas such as Calakmul attractive because of their richness in both culture and biodiversity are beginning to experience “**workshop fatigue**”. Too many academic researchers and governmental and non-governmental aid workers have descended on these areas over the past few decades, becoming intimate with local populations for the time required to learn about the challenges of rural lifestyle and perhaps implement some sort of project, and then departing the area leaving behind a trail of inflated hopes and expectations. The community that most strongly questioned authorizing the release of results had undergone a rural appraisal years earlier and was not as enthusiastic as the other communities about participating in this one.

### 7.3. Mission transparency

Participatory approaches, be they rapid ones focusing on data collection, or participatory ones focusing on capacity building, tend to **raise the expectations** of participants at the community level. Because of this **the facilitating organization must be transparent about its institutional mission and purpose in carrying out this process.** **It must also be clear about the type of assistance it is prepared to offer.** For example, a conservation organization may not be prepared to fund health or sanitation projects.

### 7.4. Importance of partnerships

Partnerships are necessary on two levels: individual and institutional. One of the important lessons from

the development profession has been to include local stakeholders from the beginning in all phases of the life cycle of a project. A participatory process should strive to build partnerships with key local actors and incorporate them in such a way that they can identify their stake in the process and their contribution to decision-making. However, this said, facilitating organizations must also be willing to accept the risk that working in partnership with local people can involve compromise. Objectives may be altered or perhaps even changed completely in the process.

To be able to truly integrate conservation and development, these programs should be based on institutional partnerships between conservation and development (including health and education) organizations to ensure the presence of appropriate capacity in these areas. One organization is not equipped to handle all of the needs that will arise during a participatory process. Through partnerships joint planning and coordinated intervention can be cost-effective and result in a lower overall impact on the local population. If, for example, the priorities identified by a community through a participatory process include acquiring technical assistance to learn about soil and crop compatibility, the facilitator should have mechanisms in place to assist the community. If the facilitating organization is not prepared or able to provide the type of assistance required, institutional partnerships should be developed to provide options that can help community members meet their goals.

### 7.5. People are not the threats

When taking a participatory approach conservation professionals should abstain from fostering the attitude that people pose threats to natural areas. In actuality it is the activity, such as illegal hunting, supported by a causal chain of driving forces, social, political, economic and cultural, that enable the practice of that activity. In their analysis of tropical deforestation Geist and Lambin (2001) identify both **proximate causes and underlying causes.** Proximate causes are defined as activities that contribute directly to the condition of deforestation such as agricultural expansion, wood extraction and infrastructure extension. **Underlying causes are the fundamental forces that underpin the activities taking place,** including economic factors that promote growth, change or development includ-

ing commercialization: policy and institutional factors including changes in political economy institutions: technological factors creating technological change or progress: cultural or socio-political factors including public attitudes, values and beliefs; and demographic factors rooted in human population dynamics. It is true that change comes from individuals but it is not likely that positive change will result from identifying individuals as threats. The social sciences, such as anthropology, sociology and economics, bring a critical perspective to conservation in their ability to unravel the complexity of root causes and identify the social, political and economic institutions that truly threaten the protection of biodiversity.

## 8. Conclusions

This paper offers some reflections about participatory approaches based on an experience with local participation in the Calakmul Biosphere Reserve, Campeche, Mexico. Integrating local people into the design and implementation of participatory research can be extremely rewarding but is not without challenges. Caution must be exercised when this type of approach is applied to support the objectives of biodiversity conservation because it may not provide expected or hoped-for results. In order to conduct an effective process the challenge for all those involved is to maintain respect for differences and, to the extent possible, attempt to bridge these differences. When participatory methods are employed for purposes of achieving biodiversity conservation goals, a critical eye must be used to examine where they will take us and how committed we are to getting there.

In closing I would like to challenge the reader to discuss and debate some important questions implicit in the Calakmul experience, and other experiences where a participatory approach has been used within a conservation context. For example, is a participatory approach that strives to empower resource user groups to lead their own development processes compatible with the urgent mandate of biodiversity conservation organizations to slow unprecedented rates of global biodiversity loss? How can we narrow the gap between the basic survival concerns of the oftentimes-marginalized communities located in and around protected areas and biodiversity conservation objectives? Is it possible that

greater commitment to the capacity building aspect inherent in participatory methodologies might assist in the evolution of a more effective approach to the long-term, sustainable conservation of biodiversity and its equally important counterpart, human cultural diversity? Although it was not the intent of this paper to answer these questions I hope that ongoing debate will be furthered through presentation of this experience.

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